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JJG

**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Gas-Flow Proportional Counter Gross Alpha and Gross Beta
Measuring Instruments
(English Translation)**

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Introduction

JJF1002-2010 "national verification procedures write rules", JJF1001-2011 "common terminology and measurement Definitions ", JJF1059.1-2012" Evaluation and Expression of Uncertainty in Measurement "together constitute the support of the formulation of regulations the basic series of specifications.

The regulations reference the International Electrotechnical Commission (IEC) standard IEC 62089:2001 "Nuclear Instruments -alpha/beta gas proportional Counter calibration and use "(Nuclearinstrumentation-Calibrationandusageofalpha/betagas proportionalcounters), combined with the practical application of domestic instrument making, it has the following characteristics.

--- Requirements for ^{210}Po source verification instruments alpha detection efficiency ratio and cross track (see 7.1.1.1).

--- Beta detection efficiency requirements for low-energy source ^{14}C test instrument (see 7.1.1.2).

--- Emphasize the background, and the efficiency and reproducibility of test for measuring the counting statistics of the requirements (see 7.3.1, 7.3.2,7.3.3).

This procedure was first formulated.

Gas flow proportional counter total alpha, total beta meter verification procedures

1 Scope

The order applies to the total gas flow proportional counter alpha, beta meter total initial verification, and subsequent use an examination.

Low background alpha, beta measuring instrument and a liquid scintillation counter this regulation does not apply to the type of solid scintillation or semiconductor detectors
Number of the test.

2. References

This procedure references the following documents.

JJF1035-2006 ionizing radiation measurement terms and definitions GB/T 11682-2008 low background alpha and/or beta measuring instrument IEC 62089:2001 Nuclear instrumentation -alpha/beta gas proportional counter calibration and use (Nuclearinstrumen-tation-Calibrationandusageofalpha/betagasproportionalcounters) ISO 9697:2008 Water quality - no brine in total beta activity measurement - Thick source method (Waterquality-Measurement ofgrossbetaactivityinnon-salinewater-Thicksourcemethod) 2009 radioactivity measurements in the environment - Soil - Part 6.. ISO 18589-6 Activity measurement of total alpha and

total beta Amount (Measurement of radioactivity in the environment-Soil-Part 6. Measurement of gross alpha and gross beta activities) for dated references, only the dated edition applies to this procedure; undated reference documents Member, the latest edition (including any amendments) applies to this procedure.

3 terminology and units of measurement

3.1 Terms

3.1.1 Instrument background instrumental background Under normal operating conditions the instrument, measured value shown no radioactive contamination of the empty sample pan when.

3.1.2 Total alpha, total beta meter gross alpha and gross beta measuring instruments not radionuclide identification, only the measurement of total alpha nuclides or instrument total beta nuclides or emissivity.

3.1.3 surface emissivity surface emission rate Standard source within 2π steradian emissivity.

3.1.4 standard flat source reference plane sources Nature and activity within a defined period of time are known, and can be used as a reference plane of a solid-state sources.

3.1.5 detection efficiency Under certain conditions the detection ratio of the measured detector count rate measured source emission rates.

3.1.6 cross track than interferer ratio (crosstalk) Instrument measuring single alpha or beta standard source, alpha or beta Road Road Road than count alpha and beta the total number of channels.